The CHEMIST

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EDITORIAL

GREETINGS AND RESOLUTIONS

HAPPY NEW YEAR! !

What sets the time limit on this cheery greeting? Certainly this will reach you long after that date, but the year is still young enough to be viewed altogether in prospect.

Personally, at this moment of our first public appearance as Editor of your paper, we feel full of greetings and thanks: to President Breithut and the National Council, for their confidence in our ability to carry on; to your retired editor, Albert P. Sachs, with and for whom it has always been a pleasure to work in collaboration (and special thanks go to him for the thoroughness and efficient thoughtfulness with which he terminated his editorial responsibility and turned its affairs over to us); and finally to all those whose response to our joint appeal last month has made possible this much more imposing issue. We are happy to start the new year so auspiciously.

And to the members of the Institute at large? Late as this comes for a New Year's greeting, it is probably well timed to catch you just after you have broken the last of your recent New Year's resolutions! Take heart and make another one! Resolve to do something for *The* CHEMIST. It may seem fat and husky this month, as compared with previous issues, but to keep it this way, and to make it thrive and grow even fatter, it needs your contributions.

Each of you is hereby invited to consider himself, and herself, a contributing editor; and each of you can be of material assistance by sending in:

(1) Notes about the professional activities of our members;
(2) Clippings about the activities of both American and foreign organizations similar to our own;
(3) Feature articles on subjects of interest to the membership at large;
(4) Brief and pertinent discussion of talks given at chapter meetings;
(5) Answers to, and comments on items published in THE MEMBERS' FORUM, or anything else which appears in *The* CHEMIST.

When, as, and if someone writes the year-by-year history of the American Institute of Chemists, 1929 will probably go down as a year of outstanding accomplishment in our organization. From the rumblings of small beginnings, 1930 should better it.

So, once again, HAPPY NEW YEAR! And may 1930 be a year of prosperity and success for *The* CHEMIST and for all chemists! F. E. W.

BIG BUSINESS AND CHEMICAL EDUCATION

No, "the interests" have not been invading the sacrosanct premises of the university halls, wielding a big stick and subsidizing the professors! But, as Dr. Neil E. Gordon, Professor of Chemical Education at The Johns Hopkins University, told the New York Chapter on December 13th, something has at last been done to bring about the co-operation—so long needed—between technical education and chemical industries.

For chemical industries—in one word INDUSTRY, represented by such splendid and powerful organizations as General Motors Corporation, Firestone, duPont, Lilly, U. S. Industrial Alcohol, and others—of their own initiative, and out of their common crying need for some drastic change, have combined to back a glorious adventure in education which promises to revolutionize our time-honored present methods.

Big business has been patient and long-suffering. It has become a habit—amounting almost to a fixation—for business executives to say, "of course a college graduate is practically a total loss for the first six months after he leaves college." Such a statement, when and if true, hurls a judgment against our collegiate training in general, but in the case of scientifically trained students—the prospective employees of industrial concerns, or the teachers of other scientifically inclined students—the demonstrated truth of it has had unanticipated and far-reaching influence.

Disregarding the bad effects on the victim personally—the disillusionment and discouragement, the lack of confidence, inferiority complex, all the make-up of a business failure—business is much more concerned with the economic waste involved. Before the World War, it did not interfere in collegiate training, but during the war, when more and more men and women, alleged to be scientifically trained, were called from teaching and various odd jobs to take places in the industrial work which needed them so badly, the glaring lack of correlation between chemical science as taught, and chemical science as actually demanded by practical working conditions was brought out only too pathetically.

The correction of these conditions was a very expensive process. If the amounts of time and money, expended annually by industry in the re-educating of its scientifically trained workers, could be translated into plain figures the grand total would probably be staggering. At first it was accepted as a necessary evil, but when, ten years after the war, conditions were practically *in statu quo*, big business decided that something simply had to be done.

The years of trial and error had taught industry that it needed (1) *better* chemists, rather than *more* chemists; and (2) some definite assurance of "getting the right man for the job." But how to get either?

The need was nation-wide, and the co-operation was nation-wide. So that men of promise need not be debarred through lack of funds, offers of four-year fellowships (one thousand dollars annually) came at once from many states. These offers were made with the understanding that the holder of a fellowship would not be bound or subsidized in any way. The donors were satisfied to gamble on benefiting indirectly through helping the industry in general.

Among the first fellowships to be established were those offered by:

Dr. J. T. Baker, of the J. T. Baker Chemical Co., Phillipsburg, N. J.
The Brown Company, Portland, Maine
The Brown Company, Berlin, New Hampshire
The Carbide and Chemical Corp., West Virginia
Dr. F. G. Donnan, England, given by Dr. Walter A. Patrick
Dr. H. A. B. Dunning, of Hynson, Westcott and Dunning, Baltimore, Md.
E. I. duPont de Nemours and Company, Virginia
The Firestone Tire and Rubber Company, Akron, Ohio
The Fleischmann Company, Washington
General Motors Corporation Research Laboratories, Detroit, Mich.
John M. Hancock, North Dakota
Hormel Foundation, Austin, Minnesota
The Kewaunee Manufacturing Company, Kewaunee, Wisconsin
The Eli Lilly Company, Indianapolis, Ind.
G. A. Pfeiffer, Missouri
The Bill Raskob Foundation, Wilmington, Delaware
William S. Speed, Louisville, Kentucky
U. S. Industrial Alcohol Company, Louisiana
John Wiley and Sons, Inc., Pennsylvania

A definite start had been made, but it was necessary to find some university which would permit the educational experiment to be carried on, and some educator big enough to plan it properly and set it going. The means of carrying out the project were furnished through the establishment, in September, 1928, of a Chair of Chemical Education at The Johns Hopkins University, by Francis P. Garvan, of The Chemical Foundation. And when it came to finding someone to occupy it, the logical choice seemed to be Professor Gordon, then at the University of Maryland, who had already successfully introduced constructive changes into the university curriculum for training future chemists. His conviction was that education and training should be definitely planned to equip a student for the demands which will most likely be made on him, and his searching for the first cause of success or failure had led him back to the high schools. He believes that about ninety percent of students know what they want when they enter college, and he places on high school teachers the responsibility for recognizing and stimulating any budding interest in scientific study.

The offer of the Chair of Chemical Education at The Johns Hopkins University—with a guaranty of "no strings attached"—and the already pledged support of chemical industries gave Professor Gordon an unheard-of opportunity to plan an ideal course, designed to give future chemists not only something more nearly like the perfect educational training which employers expect of them, but also the fundamental training and general background which must go into the make-up of prospective leaders and technical executives in industry.

Some of the standardized objections to existing conditions are:

1. Too many years of study before the chemist can actually begin his life work.
2. Too much specialization in chemistry to the exclusion of other studies, important in correlation, and as general background.
3. Too much "rubber stamp" teaching, which marks the student output of certain institutions, and seriously handicaps their future opportunities.
4. "Too much stuffing, and too little *bringing-out*, which, after all is the true meaning of *education*."

Each of these objections has been met in the constructive program as outlined by Professor Gordon. Since it is in line with the established policy of The Johns Hopkins University to arrange studies so that a candidate for the Ph.D. degree may qualify for it in four years after completing the sophomore year, applicants for this course may enter from sophomore, junior, or senior classes of the regular college course.

The overspecialization in chemistry is to be corrected by requiring the students to take regular work in physics and mathematics; and since too, too many chemists have no command of language beyond textbook matter, symbols, equations, etc., a thorough grounding in English has been added for "background." In chemistry, the four major courses—*inorganic, organic, analytical,* and *physical*—are emphasized. No attempt is made to specialize in various applications of chemistry, and all elective courses are guided carefully by the advisory committee of the department.

More perspective in the background is supplied by one course in pedagogy each year, in the following order: *Educational Psychology, Philosophy of Education* (or *History of Education*), *Theory and Practice in Chemical Education,* and *Comparative Study of Chemical Education.* These courses will be presented with the view of fitting the student to teach in a college or university, and their successful completion will entitle the candidate to a special certificate in addition to his Ph.D. Those who do not wish to teach cannot possibly suffer any harm from taking these courses, and will undoubtedly find their cultural value of future use.

Such is the outline of this ideal course. Since it is designed to "get the right man for the job," emphasis must be laid equally on the selection of the men to be taught as well on the training of the men selected.

To limit the project, yet place it on a truly national basis, provision has been made for one student from each of the forty-eight states. Every available method of selection was given careful study, and it was finally decided to work in close co-operation with local state committees, which chart and evaluate the candidate's complete record.

As an innovation in scholastic records, the personal equation is intimately correlated with the educational standing, for the chart calls for a rating on:

(1) Health
(2) Creative ability
(3) Book ability
(4) Intellectual honesty
(5) Perseverance
(6) Faculty of observation
(7) Enthusiasm
(8) Conduct
(9) Character
(10) Experimental skill
(11) Executive ability
(12) Judgment and common sense
(13) Personality
(14) College standing

The time of selection depends on the candidate himself, indicated by the desirability of obtaining students as soon as possible after they determine the field of work in which they wish to specialize. One group of twelve entered the university in September, 1929, and it is planned to have others enter and rotate in similar groups.

Once registered for the course, a student has every possible opportunity of exercising all the individuality, initiative, and resourcefulness that are in him, even to the point of allowing him to change to straight courses in mathematics, physics, or medicine, if his natural bent seems to be developing in one of those directions.

Explorative opportunities are offered in the teaching of chemistry and in industrial work, for each student is to spend two summer vacations in industrial plants, so that he may acquire first-hand knowledge of conditions, and have the advantage of associating the practical application of chemical principles with the theoretical work as taught.

Again, "big business" has come forward with generous co-operation. Dr. A. R. L. Dohme, of Sharp and Dohme, Baltimore, Md., has provided a visiting professorship, so that the students may come into personal contact with leading American and European chemists.

The discussion which followed Professor Gordon's talk brought out many very different and interesting points of view. Let us know what YOU think of it, for next month's MEMBERS' FORUM. F. E. W.

THE RELATION OF THE AMERICAN INSTITUTE OF CHEMISTS TO THE PROFESSION OF CHEMISTRY

By M. L. Crossley*

A decade or two ago the majority of the men and women who studied chemistry in America did so with a view of teaching the subject and engaging in research in connection with teaching. There was only a limited demand for trained chemical investigators in the industries and the question of the professional status of chemists was not of paramount importance and did not receive serious consideration. The fact that a professor of chemistry was a chemist was submerged by the greater evidence of his occupation as a teacher. His professional alliance was naturally with the teaching group. Even though the bulk of his time was spent in chemistry and his major interest the study of chemical problems, he was still regarded by the public as a teacher by profession. In his chemical work he was individualistic and, naturally enough, did not feel the need for the organization of chemists to secure professional solidarity and insure competent service. There was no standard of competency because there was no profession of chemistry. The chemists, having special training and attainments in chemistry, in the industries, had very little in common and were too inarticulate to be considered as constituting a basis for a profession of chemistry. It was not until we entered the World War that we became aware of the important part which chemistry plays in the industrial life of nations. Then we discovered that economic progress is impossible without chemists and for the first time the American public made the acquaintance of this queer specimen of professional negativity.

The urgency of our need for chemical service made it necessary to employ for chemical work anyone who had the slightest knowledge of chemistry and many who had merely a passing acquaintance with the subject but a strong desire to avoid the draft. Experienced industrial organic chemists, in particular, were practically non-existent. Under these conditions many were chosen but few retained.

In spite of inadequate training and inexperience, marvelous results were achieved and the American organic chemical industry established on a firm and permanent basis. The growing importance of chemistry in industry and the recognition of the role of chemical reactions in the basic phenomena of human life served to stimulate an unusual interest in the subject and to attract workers of widely different training and capacity for service. The complexity of the problems of chemistry and their economic as well as social significance demanded that their solution be

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entrusted only to persons of adequate training and experience. The problem was largely one of insuring that only those competent to render satisfactory service in chemistry be entrusted with important chemical work. Two practical difficulties arose—in the first place, who was qualified to serve as a chemist; in the second place, who was qualified to say who was a qualified chemist? A person with only an elementary knowledge of chemistry styled himself a chemist with just as much emphasis and public approval as the person of thorough training and demonstrated ability in chemistry. To make matters worse, the industries requiring the service of chemists were capable neither of appreciating the complexity and significance of their chemical problems nor of judging the fitness of the chemists they employed to solve them.

This state of affairs demanded an authoritative body capable of establishing a definite minimum standard of education and experience to entitle a person to qualify and be recognized as a chemist. It became imperative that chemists be organized into an effective professional body, and The American Institute of Chemists was created to fulfill this purpose.

In the several years that have elapsed the Institute has developed into an effective organization for the advancement of the profession of chemistry. It has established a definite standard of professional conduct for the chemist. It has emphasized that the work of the chemist must be of such a nature as to inspire public confidence in his integrity as a professional man. It has promulgated a minimum standard of proficiency which will insure competent service; and it has created the first journal devoted entirely to the free discussion of the problems which confront the profession. It is firmly believed that this marks a tremendous step forward in the struggle to unify American chemists and establish the proper status for the profession of chemistry.

The Institute's standard for a chemist is that he shall be a person who by training and experience is qualified to ascertain the facts of chemistry, and interpret them so as to benefit humanity and accelerate progress. *A chemist must be more than a person having a specialized knowledge of chemistry.* His knowledge of chemistry must be superimposed upon a foundation of general culture. He must be capable of thinking chemistry and at the same time translating his thoughts into a language which can be comprehended by the average non-technical mind. He must be able to see the significance of the chemical phenomena he observes and to harness the results of his investigation to the plow of industry to work for the enlargement and ennoblement of human life. The problems of chemistry which touch human life in various ways are numerous. Their recognition and solution require a thorough knowledge of chemistry and a fair understanding of the related sciences.

The chemist who serves best must have a wide acquaintance with human nature. It is essential that he be a leader of men as well as a useful citizen. His training should be broad enough to orientate him in his profession and to safeguard him against the tendency of becoming a non-social, narrow-minded, individualistic experimenter in chemistry.

It is an important function of the Institute to see that the minimum training for the profession of chemistry is adequate. It is equally important that the Institute should be the authoritative body to inform those who elect to invest their lives in chemistry, before they make their choice, what the profession of chemistry demands as a prerequisite in training, experience, and character, and what it has to offer in return for service well rendered. Not only must the Institute formulate the standards for the profession of chemistry, but it must take an active part in seeing that the curricula of the colleges and universities permit men to meet these standards.

The Institute believes that chemists should be men of excellent character, and proposes to use its influence and power to see that there is discrimination shown in the admission of chemists to the practice of the profession. It proposes to fight to eliminate, as far as possible, the incompetent and dishonest from the profession. The title *chemist* must be a mark of distinction and honor. Fraudulent practice in chemistry can and does cause damage and irreparable loss to property, jeopardize health, and endanger human life. The consequences are such as to justify every legitimate means of stamping it out whenever it is discovered, and of establishing the most effective safeguards against its occurrence.

In this connection, the Institute has made a study of the means employed by other similar professional organizations for dealing with the problems of incompetency, dishonesty, and unethical practice. It is found that these sister professions have deemed it wise to secure State license laws to protect their professions and the public from the ravages of the professional parasite. The effectiveness of the license system in securing the desired results is open to question, but it has the advantage of offering the public a means for legal redress. Supplemented by vigilance on the part of the Institute, in carefully selecting the members of the profession and in ruthlessly stamping out incompetency and unfair practice whenever found, a State license law may be the most effective means at its disposal for maintaining the profession at its highest status. The Institute is carefully studying the question in order to be prepared, when the time comes, to take the necessary steps to secure maximum effectiveness from the license system. It is recognized that there are several groups vitally interested in a system of State licensing of chemists, and that the Institute should keep itself informed of the activities

of these groups in order to prevent the formulation and passage of State license laws which would be to their advantage but not to the best interests of the profession of chemistry as a whole.

One of the big problems of the Institute is to find a satisfactory means of improving the economic status of the chemical profession. This is a matter which has received much consideration and several important steps have been taken to perfect the machinery necessary to secure the best results. As a preliminary, a register of the membership of the Institute was organized. The purpose of this is primarily to provide the Institute with all pertinent information about its members and thus place the Institute in a position to render intelligent service to the profession and to the public requiring the service of the profession. The effectiveness of this measure depends upon the co-operation of the individual members of the Institute. Obviously, to make this register effective, the information must come from the members, and if they refuse to take sufficient interest to supply the information they are not entitled to consideration when the Institute is consulted with respect to the fitness of men for service in special fields of chemistry.

It is the hope of the Institute that by this means there will be established a spirit of co-operation between the profession and the public it serves. The Institute will be in a position to serve as the intermediary between the employer and the chemist, seeking to serve each to the best of its ability and with a view of benefiting humanity. Collectively, the profession will accomplish what is impossible of accomplishment individually. In certain cases where the attention of the Institute has been called to unfair discrimination of the chemical profession with respect to other technical professions, an attempt has been made to secure relief and the results have usually been gratifying. It is believed that by judicious measures the Institute can exercise considerable influence on the economic evaluation of the service rendered by the chemist and secure for the profession the compensation which the service rendered merits. United, the profession will secure economic freedom; divided, the individual chemist will continue to work under conditions which tend to enslave him and to undermine the confidence of the public in the chemist.

One of the most important problems of the Institute is to secure the support of the chemists themselves. The Institute exists to serve chemists. Every person who is qualified as a chemist and who is of satisfactory character should be a member of the Institute. Instead of a membership of about five hundred and fifty, the Institute should have a membership of about ten thousand. It is imperative that the chemists who are qualified should enroll as members of the Institute, for the In-

(*Concluded on page 20*)

THE RELATION OF CHEMISTRY TO BANKING

Excerpts from an address by Mr. I. J. Roberts, before the Washington Chapter of the A. I. C., December 6, 1929

A bank is regarded by many as simply a place where they may deposit their money and feel sure that it will be protected and available when needed. This is a phase of banking of great value to society. But a modern bank performs a far greater service than acting merely as a medium for the safekeeping of money. It is also a lender of money and is therefore a reservoir of credit. From it the farmer may obtain the funds necessary to buy his seed and machinery, and to carry on his business until he harvests his crop and is thereby able to reap the reward of his labors. The bank also lends money to the merchant and the manufacturer to tide them over until they can sell their goods, and to the investor who deposits collateral, in the form of stocks and bonds, as security for his loan.

A bank invests a portion of its funds in bonds, which are the obligations of corporations to pay certain sums at fixed times and to pay interest thereon at specified rates and dates. It will therefore be seen that the bank is the financial center of the community and that banking is intimately connected with all phases of industry.

Not so very long ago the layman was inclined to confuse the chemist with the alchemist of the Middle Ages, who sought frantically for some means of changing the baser metals into gold, or who endeavored to discover some drug capable of restoring health or prolonging life. But a great change in the objective and methods of chemical research developed at about the beginning of the nineteenth century. While progress at first was slow, the last fifty years have witnessed tremendous developments in industrial processes until chemistry is now commonly regarded as "The Aladdin of Modern Industry."

The magic of chemistry has revolutionized our standards of living, has destroyed entire industries, and has created entirely new lines.

As an example of the destruction of an industry, take the case of indigo. The chief source of indigo was India. In 1897 the annual value of the crop of the indigo plant in that country was $20,000,000. By 1914 this had been reduced to $300,000, simply because chemists had worked out a process for making artificial indigo of finer quality than vegetable indigo at a greatly reduced cost. In 1914 indigo was selling at 15 cents a pound, whereas it had sold as high as $4 a pound 100 years previously.

Due to the extensive research work of industrial chemical companies, it has been stated that one-third of the present factory output is of goods unknown 50 years ago.

Hence it is of the utmost importance that the banker be informed of

the developments in the field of chemistry, as a new process can quickly depreciate the value of a bond issue or endanger the safety of a loan made to a corporation whose business might be adversely affected by such process.

Thus the fields of finance and chemistry have become most intimately related.

As a matter of fact, Dr. Charles E. Munroe, that grand Old Man of Chemistry, under whom I had the pleasure of studying a little chemistry in George Washington University, is authority for the statement that "more than thirty years ago German banks employed expert chemists to investigate and appraise industries seeking loans, and within the past few years our own banks have begun to do likewise."

Five years ago the wood alcohol industry in this country believed itself to be in a sound condition, but in 1925 it suddenly discovered that foreigners were producing wood alcohol synthetically and shipping it into this country at a great reduction in cost.

The textile industry has experienced a most remarkable development. Thirty years ago silk was a luxury which only a few could afford, and cotton was worn by the great majority. But about that time a chemist discovered a process for manufacturing artificial silk, or rayon, from wood pulp or cellulose, and the result is that we now have beautiful and durable fabrics at moderate prices, rivaling silk and cotton in importance.

The rayon industry began activities in this country in 1911. By 1922 the consumption of rayon in the United States amounted to 23,500,000 pounds, 59 percent of which was imported. By 1926 consumption had increased to 110,349,000 pounds, but domestic production had increased so rapidly that 87.7 percent of that amount was manufactured in this country. The wholesale price for rayon decreased from $4.77 per pound in 1919 to $1.50 in 1928. The dividends paid by the Fall River Cotton Mills in 1922 amounted to $3,047,800, but by 1928 they had fallen to $930,000. How much of this decrease was due to the growing use of rayon I cannot say, but the figures impress me as being highly significant.

The effects of chemical research along these and other lines are, of course, well known to all of you, and I have referred to them merely for the purpose of illustrating how vitally the field of finance is affected by the activities of the members of your profession.

While the accomplishments of chemical science during the past twenty-five years have been revolutionary and have had a most important influence on our everyday life, I believe that chemistry has only begun its work in industry and that the outstanding value of the contributions of the chemist to our economic progress will be increasingly recognized and more adequately rewarded.

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REPORT ON CONDITIONS IN NAVY YARDS

TO THE COUNCIL OF THE AMERICAN INSTITUTE OF CHEMISTS:

Your committee appointed to investigate conditions in Navy Yards relating to the compensation and working conditions of chemists submits the following report. The investigation has been limited to a finding of facts; the steps deemed advisable to bring about amelioration of any injustices determined to exist are left to the discussion and determination of the Council.

There is general dissatisfaction among civilian chemists in the United States Naval Establishment regarding salaries (or wages) which is based on two distinct grounds:

1. That the chemists in the Navy Service are not compensated commensurately with chemists in other departments of the government service, and

2. That the chemists in the Navy Service are not compensated commensurately with other civilian employees of the Navy Department.

Your committee, after an investigation of the published and public data available, and after a study of individual salaries, has concluded that this lissatisfaction is based on adequate grounds and that, in fact, present conditions of employment in the Navy Department for chemists are not equitable and should be revised.

1. *The Compensation of Chemists in the Navy Service* as compared with that of chemists in other departments. The United States Civil Service Commission has published a circular, Form 2528, dated January, 1926, entitled "Opportunities for Chemists in the United States Civil Service." This pamphlet issued by the United States Civil Service Commission points out that the Government employs about one thousand chemists in addition to a large number of workers whose duties involve chemistry in some degree, such as technologists, patent examiners, physicists, etc.*

There are five grades of chemists which are given below with the annual salaries prescribed for these grades in the departmental service at Washington, D. C., as allocated under the classification act of 1923:

Junior Chemist	$1860–2400 per annum
Assistant Chemist	2400–3000 per annum
Associate Chemist	3000–3600 per annum
Chemist	3800–5000 per annum
Senior Chemist	5200–6000 per annum

Unfortunately the Naval Establishment does not pay its civil employees according to this schedule. Attached to this report is a "Sched-

* Certain increases in pay for chemists in the United States Civil Service became effective July 1, 1928, but are not shown in the latest edition available (Jan., 1926) of Form 2528.

ule of Wages for Civil Employees under the Naval Establishment for the Calendar Year 1927" which contains the schedule of wages effective January 1, 1927, and remaining in force until December 31, 1927. According to this schedule we have chemists classified and paid as follows (the per diem basis being converted to an annual basis by assuming 313 working days per annum):

Junior Chemist.....	$6.00–6.40 per diem	$1878–2003.20 per annum
Assistant Chemist....	6.80–7.68 per diem	2128.40–2403.84 per annum
Associate Chemist....	8.08–9.12 per diem	2529.04–2854.56 per annum
Chemist.....	9.60–13.28 per diem	3004.80–4156.64 per annum

In addition to the injustices due to the per diem system itself (which is considered later in the report) it will be seen that the compensation received in the Naval Establishment by chemists is distinctly lower than for similar grades in the other departments. It will be noted that the maximum received by Associate Chemists in the Naval Establishment ($2854.56) is distinctly less than the minimum in the departmental service at Washington, D. C. ($3000). The inequitableness, marked as it is even for 1927, was still greater in 1926 when the maximum per diem compensation for the various grades was in general even lower, as follows:

Junior Chemist.....	1926—maximum per diem $6.00
Assistant Chemist.....	1926—maximum per diem 7.20
Associate Chemist.....	1926—maximum per diem 9.12
Chemist.....	1926—maximum per diem 12.48

It is instructive to examine Form 2528, mentioned above, with a view to determining how many positions paying $5000 or more per annum exist in the branches of the various services. A compilation is appended. The number of positions paying $5000 or more per annum may roughly be considered as a measure of the opportunities available in the service.

Department	Number of Chemists Employed	Number of Positions Offering $5000 per Annum, or More	Percentage of Positions at $5000 per annum, or More
U. S. Department of Agriculture:			
Bureau of Chemistry.....	198	43	21.7%
Bureau of Soils.....	27	4	14.6%
Bureau of Public Roads.....	4	1	25.0%
Bureau Home Economics.....	9	4	44.4%
Forest Service.....	27	8	29.5%
Bureau Plant Industry.....	20	5	25.0%
Bureau of Dairying.....	11	1	9.1%
Bureau Animal Industry.....	29	6	20.6%
Fixed Nitrogen Research.....	34	5	14.7%

U. S. Civil Service Com.			
U. S. Department of Commerce:			
Lighthouse Service	2	0	0.0%
Bureau of Standards	105	24	22.8%
Bureau of Mines	62	10	16.1%
Government Printing Office	4	1	25.0%
Geological Survey	11	4	36.3%
Navy Department	60	1	1.6%
U. S. Treasury Department:			
Mint Service	9	0	0.0%
Customs Service	33	0	0.0%
Public Health Service	13	1	7.7%
Internal Revenue	41	3	7.3%
U. S. War Department:			
Quartermasters Corps	4	0	0.0%
Air Service	6	0	0.0%
Medical Dept. at Large	2	0	0.0%
Eng. Dept. at Large	2	0	0.0%
Ordnance Dept. at Large	25	3	13.0%
Chemical Warfare Service	64	14	21.8%
Averages of all employees	601	138	22.9%
U. S. Navy	60	1	1.66%

The Navy Department is the only department listed as having chemists paid on a per diem basis. This basis is itself a subject for criticism and is considered an injustice for the following reasons. The per diem basis is considered as classing the chemists with mechanics and others whose compensation is usually on an hourly or per diem basis. Professional dignity justly resents this invidious distinction from all other chemists in the government service. The claims sometimes made that a per diem basis renders accounting simpler fails in view of the fact that all non-civilian employees (enlisted men and officers) are paid by the month or year, and some civil employees are on a per annum basis; surely two different systems are more complicated than either one alone. But there are other disadvantages attached to the per diem system. The usual advantages accorded chemists in the departmental service are limited in the Naval Establishment by the fact that annual sick leave in meritorious cases may not exceed fifteen days whereas the general departmental service allows thirty days. There are also minor disadvantages such as cases (these are not general) where the annual leave (vacation) of thirty days has been ordered taken in such a manner as to prevent the accumulation of more than ten earned days at any time. If an employee is not on duty Saturday morning during the period when the rule of a summer Saturday half holiday is in effect he is nevertheless charged with a full day against his annual leave.

Pay in the Naval Establishment for Civil Employees is at present determined by the procedure established in an act of Congress of July 16,

1862, which provides "for fixing the rates of pay for employees of Navy Yards, Naval Stations, and Field Offices, which shall conform, as nearly as is consistent with public interests, with those in private establishments in the immediate vicinity of the Navy Yards and Stations, and shall be determined annually by the Commanding Officers of the Navy Yards and Stations, subject to the approval and revision of the Secretary of the Navy." The schedule previously mentioned of salaries for chemists is clear proof that salaries in commercial work for men with qualifications equal to the respective grades of chemists could not have been used as the basis for fixing the rates of pay.

A commentary on the methods of arriving at wages in Navy Yards is furnished by the attached document entitled "Appendix" which is a letter from the International Association of Machinists to the departmental wage board of review, Navy Department, with reference to their dispute regarding wages in navy yards, which was inserted in the Congressional Record by Senator Royal S. Copeland of New York. It brings out the fact that a determining factor in arriving at wage increase is frequently the total amount of money involved in the wages under discussion; an increase in the rate may necessitate a cutting down in the number of men employed. Such a procedure is obviously unfair to the men. The local wage boards which are supposed to make their recommendations on the basis of wages for similar work in the vicinity of the yard are frequently hampered in their deliberations by the necessity of keeping an eye on the available appropriation. Such a condition could not prevail in commercial work and is unworthy of any department of our government.

2. *The Compensation of Chemists in the Navy Service* as compared with that of other civilian employees of the Naval Establishment. An examination of the publication already referred to, entitled *Schedule of Wages for Civil Employees under the Naval Establishment*, brings out the following noteworthy facts:

Physicists are provided for at $6000, $5500, $5400, $5000, $4500, and $4400 per annum and $17.20 to $14.56 per diem (equivalent to $5383.60 per annum to $4557.28 per annum). The associate, assistant, and junior physicists are compensated at rates which are given in the following table with the corresponding pay for chemists as a basis for comparison:

Chemists	Physicists
Chemist—$4700 per annum $9.60–$13.28 per diem	Physicist—$4400–$6000 per annum $14.56–$17.20 per diem
Associate Chemist $8.08–$9.12 per diem	Associate Physicist $11.44–$13.68 per diem
Assistant Chemist $6.80–$7.68 per diem	Assistant Physicist $8.08–$10.56 per diem

Junior Chemist
$6.00–$6.40 per diem

Junior Physicist
$6.24–$7.60 per diem

This table brings out certain inequalities. In the first place it may be noted that the $4700 per annum to a chemist is paid only at the Naval Academy, so that all other chemists are on a per diem basis at the rates indicated. The *minimum* for physicist exceeds the *maximum* for chemist; and the maximum for associate physicist exceeds the maximum not merely for associate chemist but even for chemist!

The engineering service is classified similarly to the chemistry and physics services and the rates are given as follows:

Engineer: $4700 per annum (Naval Academy)
$12.08–$15.60 per diem

Associate Engineer: $9.12–$11.60 per diem (also a position at $3500 per annum)

Assistant Engineer: $7.68–$8.80 per diem

Junior Engineer: $6.00–$7.20 per diem

Here it also is to be noted that the rates are distinctly higher than for chemists.

The Drafting Service is classified somewhat differently. Chief draftsmen are rated at $14.56 to $16.48 per diem, supervising draftsmen at $10.56 to $13.20 per diem, and design draftsmen at $8.08 to $10.16 per diem. Comparison is not simple but it is clear that the chief draftsmen, comparable in position to chemists, are compensated at a higher rate than the chemists.

One service, the Metallurgical Service, seems to have suffered fully as much as the Chemical Service in the Navy Establishment. The ratings for metallurgists are:

Metallurgist: $4700 per annum (Naval Academy)
$9.12–$12.16 per diem

Associate Metallurgist: $7.68–$8.80 per diem

Assistant Metallurgist: $6.24–$7.28 per diem

Junior Metallurgist: $5.36–$5.84 per diem

It may also be noted that under the heading "Supervisory Mechanical Service" rates are provided for 42 varieties of master mechanics at $10 to $16 per diem and 21 varieties of foremen at $8 to $14 per diem. The maximum for chemist is $13.28 per diem. As pointed out later the maximum rating for any grade of chemist is not always the one usually paid.

All the data heretofore presented in this report substantiate the claim that chemists in the Naval Establishment are not so highly compen-

sated as chemists in other branches of the government service and are not so highly compensated as other technical employees in the Naval Establishment.

The effects of such conditions have been unsatisfactory to the morale and efficiency of chemists. Men have been carried on the records under other than chemical classification to receive promotion and higher pay than was possible under chemical classification. Thus it is known that a qualified college graduate, specializing in chemistry, who has been the civilian head of one of the chemical laboratories in an eastern Navy Yard, entered the service as *HELPER, GENERAL*, and has had his rating changed successively to *ELECTRICAL MACHINIST, CHEMIST, ASSOCIATE CHEMIST*, and *ASSOCIATE MECHANICAL ENGINEER*, although he has acted as chief chemist all the time. Similar cases are not rare.

We have been able to obtain information as to the rating, promotions, departures from the service, etc., for several of the leading eastern Navy Yards and other units in the Naval Establishment. For reasons of prudence it is inadvisable to indicate the exact source of the information obtained but it is absolutely authoritative.

In one laboratory the departures of chemists since 1914 together with pertinent data are listed in the following table:

Rating	Entrance Pay per Diem	Pay at Time of Resignation per Diem	Years Service in Naval Establishment
1 Chemist	$3.52	$8.00	9
1 Asst. Chemist	4.96	6.00	2
1 Asst. Chemist	5.44	4.88	1
1 Asst. Chemist	4.24	6.00	2
1 Asst. Chemist	4.00	6.00	3
1 Asst. Chemist	5.20	4.88	2
1 Asst. Chemist	5.44	4.88	1
1 Asst. Chemist	5.12	6.00	5
1 Asst. Chemist	5.12	5.60	1
1 Asst. Chemist	5.44	6.40	6
1 Asst. Chemist	5.20	5.20	0.5
1 Asst. Chemist	5.44	4.88	2.5

It is worthy of note that in one case 2 years' service had brought a decrease from $5.20 to $4.88 per diem, and in another case 2.5 years' service had brought a decrease from $5.44 to $4.88 per diem. It had been found necessary to reduce these small rates, which are lower than those obtained by a large percentage of stenographers and clerks in commercial work, and even for many clerks and other non-technical em-

(*Continued on page 22*)

THE CHEMIST AND CHEMICAL CONTRACTS

Excerpts from a talk given by Mr. Louis Necho before the Philadelphia Chapter of the A. I. C., December 3, 1929

After brief complimentary remarks to the chemist as a contributor to human advancement, Mr. Necho discussed the first essentials of all contracts; to wit: there must be an offer, definite and concise; and acceptance in practically the same terms; the parties to the contract must not be disabled due to age, insanity, or marriage; the object of the contract must be a legal one; lastly, to make a contract binding, there must be a good and sufficient consideration.

The speaker then discussed patent law insofar as it affects the chemist, and particularly the chemist who assumes the role of inventor. He gave some good general advice on what class of inventions should and should not be patented, and emphasized the advantages of patenting an invention on which it would be possible to hold infringers. Competent legal advice is a good and necessary investment in matters of this kind.

The free lance chemist-inventor who would secure a patent must make a competent search in the United States Patent Office to ascertain the novelty of the invention and its general patentability. A complete disclosure is absolutely necessary for the granting of patent rights; a patent obtained on an incomplete disclosure would not insure adequate protection, and would be a waste of money. Here, too, disinterested legal advice should be consulted; "Pay to keep out of trouble, rather than to get out of it."

As to the chemist-inventor who is employed: if he is bound by a contract, there is nothing for him to do but abide by his contract. If, however, he is not bound by a contract, the question of employer's "shop rights" must be considered. In general, the law covering this situation states that when and where the inventor develops his idea on his employer's time, and with the aid of his employer's machinery and facilities, the employer has an irrevocable license—the "shop right"—to use the invention in his business. This situation also holds true in cases where, were it not for the connection of the employee with a certain employer, the employee would never have thought or conceived of the invention.

These general statements of the law are adaptable to various sets of facts, and are subject to various interpretations in court. Mr. Necho concluded his talk by citing some decisions in illustration of this point. Several interesting and pertinent questions were brought up for discussion.

The Relation of the American Institute of Chemists to the Profession of Chemistry

(*Continued from page 10*)

stitute must represent the majority of chemists in America to be recognized as the authoritative body qualified to represent the chemical profession. The legitimate way to bring the qualified chemists into the Institute is for the present members of the Institute to assume the responsibility for convincing their friends outside of the Institute of the purpose of the Institute and the necessity of their allying themselves with it. This is particularly important for the members of the Institute who are connected with the teaching profession. They have the responsibility for molding the type of person to carry on the work of the profession in the future and every possible effort should be made to secure the wholehearted support of all teachers of chemistry in colleges and universities qualified to train chemists.

Furthermore, it should be the primary aim of these members of the Institute to select only the best of their students for service in the profession of chemistry. They should discourage the indifferent, irresponsible, and unthinking student element from selecting chemistry as a profession, and should strive to inculcate the principle that the type of service which chemistry is destined to render in the future makes necessary chemists who have imagination, and will-power enough to direct it in purposeful channels.

The machinery is provided for selecting the future members of the chemical profession before they have finished their chemical training. The junior membership provided for by the Institute should make membership in the Institute in the future an automatic process. Student members would be selected by their teachers and recommended for membership as an honor in recognition of their promise of ability to become professional men of the type desired by the Institute. On election to membership the student members would be the potential fellows of the Institute, for when they had met the additional requirements of training and experience, provided they were still of satisfactory character and mentality, they would be promoted to associate members and ultimately to fellows of the Institute. It is therefore obvious that the future of the Institute as well as the future of the profession of chemistry is literally in the hands of the chemistry teachers in our colleges and universities. When the significance of this thought is understood and appreciated by these teachers, the future of the chemical profession in America will be secure. The Institute must endeavor to bring this to pass.

CONCERNING OUR BRITISH BRETHREN

The Chemical Trade Journal and Chemical Engineering for December 6th, and *The Chemical Age* for December 7th, carried an account of the annual meeting of the British Association of Chemists, held at Manchester on November 30th. Commenting on the address of the President: "Mr. F. Schofield, drew attention to the increasing tendency in every direction to large-scale organization in industry. The time was coming when a chemist would not have to consider which company he would enter, but how he was to enter *the* company. Imperial Chemical Industries, Lever Brothers, and the Margarine Trust were good examples of the trend of events. Amalgamation begun on these lines would not stop there. It was only the beginning of large associations and combines. This would mean the restriction in movement of the chemist and a change in his valuation as an individual. This was not necessarily a bad thing. There was no individuality—rather the contrary, that large industrial organizations would use their power oppressively. But it has to be recognized that the possibility called for a similar rationalizing in the part of the professional worker or he must undoubtedly in the circumstances of the case suffer injury. There were increasing opportunities for the professional working as an organized unit, which could not be grasped by individuals."

But that is only the half of it! In the editorial columns of *The Chemical Age* for December 14th is the following:

"Rationalizing the Chemists Themselves"

"It was Dr. W. R. Ormandy, who, during a recent discussion on *Rationalization*, unfeelingly reminded the meeting that the organization of chemists themselves was about as irrational as anything could be. Mr. F. Schofield, at the Manchester meeting of the B. C. A., emphasized the need of a more logical reorganization of societies. . . and now a writer in the *Manchester Guardian and Commercial* has been collecting instances of unreason in the matter of organization that the chemical societies present, and sketching the ideal of a final unity in which chemists will have one faith, one hope, one tabernacle, one president, one secretary, one editor, one subscription fee, and everything else for the future in the singular degree. There can be no doubt that much obvious gain would result. At the same time it would be at the cost of the always attractive quality of variety. It must be remembered that societies, like village chapels, will fight spiritedly for their own existence, and that keeps them in a lively state of animation; whereas welded together into one immense entity, a terrible inertia might infect the mass, requiring great

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Report on Conditions in Navy Yards

(*Continued from page 18*)

ployees in the Navy. The reason for these resignations were all to accept increased compensation in commercial fields except in two cases where the chemists went to other government departments at over 30 percent increase in pay. It is not strange that in the records available to your committee there is not a single instance of a chemist having transferred from some other department to the Naval Establishment.

In another Navy Yard the resignations since 1914 are given in the following table, but the years service in the Naval Establishment are not included because of lack of necessary data:

Rating Chemist	Entrance Pay per Diem ($2100 per annum)	Pay per Diem at Time of Resignation ($2300 per annum)
Associate Chemist	$7.68	$7.68
2 Asst. Chemists	4.00	4.00
1 Asst. Chemist	4.00	6.56
1 Asst. Chemist	4.00	6.68
1 Asst. Chemist	4.64	5.60
2 Asst. Chemists	5.12	5.12
1 Asst. Chemist	5.12	6.40
2 Asst. Chemists	5.20	5.20
2 Asst. Chemists	5.68	5.68
1 Asst. Chemist	6.32	6.32
2 Asst. Chemists	6.40	6.40

It is not to be supposed that the maximum salary for a grade is the usual pay. At an eastern Navy Yard the actual rates as compared to the maximum rates are indicated. The figures are for the year 1926 and may differ from the 1927 figures:

	1926 Rate per Diem	1926 Maximum Permissible per Diem
1 Chemist	$12.48	$12.48
1 Associate Chemist	8.48	9.12
3 Associate Chemists	8.08	9.12
1 Assistant Chemist	6.80	7.20

The chemical laboratories in the Naval Establishment examine and report on millions of dollars worth of materials, apply process control in numerous manufacturing process and act in research and trouble elimination in many cases. They assist other government institutions and departments and have an important function in the preparation of specifications of various kinds.

Not only are the rates fixed for the various grades inadequate, but perhaps of equal importance is the fact that earned promotions (as distinct from changes in rate due to annual changes in the Schedule of

(*Continued on page 24*)

THE NATIONAL COUNCIL

The sixty-eighth meeting of the Council of the American Institute of Chemists was held at the Chemists' Club, 50 East 41st Street, New York City, on Friday, December 20, 1929.

President Frederick E. Breithut presided. The following officers and councilors were present: Messrs. N. E. Gordon, M. L. Crossley, W. M. Grosvenor, A. P. Sachs, B. T. Brooks, H. R. Moody, and H. S. Neiman.

The minutes of the previous meeting were approved. In the absence of the Treasurer, the Secretary submitted the Treasurer's report, to the effect that the balance on hand was $2280.59 with all current bills paid.

The Secretary read a letter from the Union of Technical Men, referring to the hearing before the Municipal Civil Service Commission of New York City, relative to the new salary schedule and classification for Municipal Chemists, and other matter was referred to President Breithut with power to act.

A Committee composed of Messrs. Jacob Jay, Frederick J. Kenney, Frank E. Hale, and Frank Biele, representing the Municipal Chemists of New York City, was introduced, and the matter of the proposed reclassification of the Municipal Chemists, with special reference to the tentative classification suggested by the Municipal Civil Service Commission was discussed. The matter was referred to President Breithut.

The Secretary was directed to write the Municipal Civil Service Commission accepting its invitation to appear before it relative to the reclassification of Municipal Chemists, and the matter was referred to President Breithut with power to act.

Upon motion made and seconded, a rebate of ten percent of the amount of dues received from members was directed to be paid to each chapter.

Mr. James W. H. Randall and Mr. Frederick W. Zons were appointed members of the Membership Committee.

The Secretary was directed to send a list of delinquents to each Councilor.

Dr. Grosvenor, of the Committee on Licensing, reported progress and the matter was referred to him with power to act.

The names of new members elected at this meeting are on page 35.

HOWARD S. NEIMAN,
Secretary

Report on Conditions in Navy Yards

(*Continued from page 22*)

Wages) are extremely difficult to secure. A system of inspection of each individual record once every six months or year with selection for promotions as warranted by the record is not practised in the Navy as it is in a number of other government departments.

Your committee considers that the facts warrant the conclusion that an actual even if not intentional discrimination exists against chemists in the Naval Establishment as compared with chemists in other departments of the government and as compared with other technical civilian employees in the Naval Establishment; that there is no just basis for such a discrimination. Your committee earnestly recommends that the Council take whatever steps are possible to bring about an amelioration of these conditions.

Respectfully submitted,

ALBERT P. SACHS,
HENRY ARNSTEIN

Appendix to Report of Committee on Conditions in Navy Yards

As a matter of policy, the above report was not published, but was presented to the Secretary of the Navy, Charles D. Wilbur, together with a suitable resolution. The presentation of the resolution was made by a suitable Committee of the Washington Chapter headed by our distinguished Honorary Fellow, Charles E. Munroe. The resolution and report were not acted upon favorably by the Secretary of the Navy.

On December 5, 1927, the following letter was addressed to the Wage Board of the United States Navy Department. Secretary Wilbur's reply is added.

December 5, 1927

To the Honorable Wage Board,
United States Department of the Navy,
Washington, D. C.

SIRS:

The American Institute of Chemists, a national, professional organization of chemists, established to elevate the professional status of chemists and to improve the profession of chemistry, is in no wise connected with any attempts related to those of labor unions and similar organizations. It is particularly interested in the status of chemists in the United States Naval Establishment from a purely professional viewpoint.

We believe that the chemists in the service of the United States Naval Establishment have been unintentionally but nevertheless seriously discriminated against by previous findings of the Wage Board and by the regulations which have established their ratings. The basis for this belief has been set forth in a resolution previously presented to the Secretary of the Navy and to the Wage Board, containing a copy of a report made to the National Council of the American Institute of Chemists by a special committee appointed for the purpose of which the undersigned is the chairman. A copy

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NEWS OF THE CHAPTERS

New York

The regular monthly meeting was called on December 13th, at 8:00 P. M. Dr. M. L. Crossley presided; the minutes of the previous meeting were approved, but no other business was transacted.

Professor Neil E. Gordon, who holds the Chair of Chemical Education at Johns Hopkins University, addressed a large and interested gathering on the subject, "The Education of the Chemist." (See page 3 for full account.)

Following Dr. Gordon's paper there was an animated discussion in which President Breithut and Fellows Brooks, Jay, Gershon, Wright, Prager, and others took part. The discussion showed not only the active interest which the members of the Chapter take in the subject, but also that considerable thought had been devoted to it.

Dr. Crossley told a little of the plan of the Committee on Education to draw up a satisfactory standard curriculum for chemists. Following a vote of thanks to Professor Gordon, the meeting adjourned.

At the meeting on January 17th, Dr. Linsly R. Williams, Managing Director of the New York Academy of Medicine, will address the chapter on "Professional Ethics."

KARL M. HERSTEIN,
Secretary

Philadelphia

The monthly meeting of the Chapter was held at the Engineers' Club on December 5th. Louis Necho, Patent Attorney of Philadelphia, the speaker of the evening, took as his topic "Contract Law: How It Affects the Chemist." He gave a very lucid exposition of the elements that enter into a contract and spoke also on how, when, and what is patentable, and how to go about selling a patent.

A discussion followed in which every member of the audience participated. It was decided to prepare data on salaries of Navy Chemists for presentation to the National Council.

BENJAMIN LEVITT,
Secretary

Washington

At the special meeting of the chapter on December 6th, at the Cosmos Club, Mr. I. J. Roberts, Assistant Cashier of the Riggs National Bank, and Past-President of the Washington Chapter of the American Institute of Banking, delivered an address on "Organization of Chemists from a Banker's Viewpoint, and How Chemists Can Serve the Banking Industry."

During the round-table discussion which followed many interesting points were brought out, especially concerning the work of the Institute of Banking.

(*Continued on next page*)

At the regular meeting on January 10th, Mr. W. N. Rehlaender, Assistant to the Director of Personnel and Business Administration of the United States Department of Agriculture, talked on "Classification Work as Applied to Professional Workers."

Dr. S. L. Hilton, Past-President of the American Pharmaceutical Association, a prominent physiological chemist, will discuss State licensing of chemists at the February meeting.

A. L. MEHRING,
Secretary

PERSONAL

Fellow Dr. Maxmilian Toch was the winner of the first prize in the 1929 member show and competition of the Camera Club of New York. The winning photograph, entitled "Reflections," was published in *The New York Times*.

PAGE PROFESSOR GORDON!

The following item was recently snipped from the columns of *The Sun:*

WANTS TO HELP A BOY

To the What Do You Think Editor—Sir: There is a little chap of nine whose whole ambition is to study and experiment with electricity and chemicals. He reads everything on this subject and enthuses about experiments given which he can always follow. His parents are poor. Will some reader of *The Sun* let me know how this bent can be cultivated, as this boy may be a genius.

MRS. EDWARD BORN

It is just possible that the lady may be right. What a wonderful opportunity for someone who would like to experiment on a combination of Montessori and Johns Hopkins!

F. E. W.

The Relation of Chemistry to Banking

(*Continued from page 12*)

I am informed that there are now over twenty-five thousand chemists in this country, or three times as many as there were thirty years ago. This evidence of the rapid increase in the demand for highly trained chemists would indicate the desirability and the necessity for an organization such as the American Institute of Chemists, which can be developed into a powerful factor in advancing the interests of your profession and in establishing a code of ethics similar to those adopted by the medical and legal societies, which were in existence long before chemistry had reached its present high position in the scientific and business world.

EMPLOYMENT NOTES

The Bureau of Employment of The Chemists' Club lists the following positions, as of possible interest to members of the Institute. Anyone interested should communicate directly with the Bureau, with the understanding that members will receive introductions to these prospective employers only under the conditions of the Bureau's regular contract.

493 Chemist with varnish-making experience for both plant and laboratory work. Salary not exceeding $3600 a year.

795 Opening in a physical research department for a young graduate who is interested in physical chemistry and metallurgy.

907 Technical director to take charge of a number of paper mills. Position in the far west.

919 First-class research chemist with chemical engineering training, preferably with experience along food lines.

927 Man for chemical sales. Should have sales experience. Salary in the neighborhood of $4500.

931 Chemical engineer with experience in the manufacture of synthetic resins. Salary probably in the neighborhood of $4000.

947 Either a man or woman with teaching experience who would consider a position for the second semester only. This candidate should have at least a master's degree, and preferably a Ph.D.

We also have various calls for recent graduates, the majority of which are away from New York.

WANTED: MANUFACTURING EXECUTIVE

1X30 A nationally known company has a permanent position for a manufacturing executive with a metallurgical background. Must have had experience in production work and must be capable of handling a new product from the laboratory and putting it on a quantity-production basis. He will have to develop and organize a factory of about 25 to 50 employees to start. The plant is located in New Jersey, near New York City. Communicate with Howard S. Neiman, Secretary.

UNITED STATES CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following open competitive examinations:

Position	Salary	Apply before
Junior Chemical Engineer	$2000	February 4, 1930
Associate Agronomist (Sugar beets)	3200–3700	February 12, 1930
Assistant Agronomist (Sugar beets)	2600–3100	February 12, 1930
Junior Patent Examiner	2000	February 18, 1930

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or from the secretary of the United States Civil Service Board of Examiners at the post-office or custom-house in any city.

Report on Conditions in Navy Yards

(*Continued from page 24*)

of this report is enclosed with this letter with the earnest request that it be considered carefully by the Wage Board in its present collection of data which it is carrying out under the instructions of the Secretary of the Navy.

The Navy is about to make considerable expenditures in a program which the Congress will probably soon authorize. A very large part of this expenditure will be for materials which will be tested in the laboratories of the various Navy Yards. The chemists in charge of this extremely important work are now being paid, as the enclosed report shows, salaries which are considerably less than paid for similar work in nearby commercial plants, and also less than those paid for similar work in other branches of the government service.

We are convinced that the state of affairs in which chemists receive ratings lower than those to which their experience and ability would entitle them to in other branches of the government service is not only unfair to the chemists involved but is also unfair and detrimental to the Naval Establishment itself. The records show that men transfer from the Naval Establishment to other branches of the government service but that none transfer from other branches to the Naval Establishment. The cause for this is the fact that men receive lower ratings as chemists in the Naval Establishment than in other departments, and that even for a given rating their wages are lower than for the same ratings in other branches of the government service.

The American Institute of Chemists realizes that the individuals in the Naval Establishment are not always in a position to vigorously prosecute their own just claims as zeal in such a cause may easily be misunderstood. Furthermore, the relatively small number, in spite of their importance, of the chemists in the Naval Establishment, makes their voice but faintly heard when the Wage Board hold its hearings. It is natural that the Board should be influenced by those ratings and branches of the service which are most numerous.

The interest of the American Institute of Chemists is in no way biased. It is attempting to maintain and extend the reputation of the Navy for fair dealings with a group of men in its service, and it is attempting to maintain and elevate the professional standard of a group of highly trained men. It is to the interest of the American Institute of Chemists, to that of the Navy Department, and to that of the country at large that these highly trained men who occupy in many respects a key position in the Naval Establishment be properly rated and adequately paid by prevailing standards in other departments of the government service so that the right kind of chemist will be attracted to the service of the Naval Establishment and that its present experienced personnel be permitted to remain to render loyal and efficient service. Under present conditions it is frequently at a distinct personal sacrifice that these men remain in their posts to uphold the honor of their profession and the traditions of the Navy. We urge that their case be given the most careful consideration.

Respectfully submitted,

A. P. SACHS

December 9, 1927

American Institute of Chemists,
80 Washington Street, New York, N. Y.

GENTLEMEN:

Receipt is acknowledged of your letters of December 5, 1927, addressed to the Wage Board of Review and the Secretary of the Navy, relative to the compensation of chemists employed under the Naval Establishment.

The Wage Board of Review has completed its work after fully considering the reports on the pay of chemists from all the local Wage Boards where chemists are employed.

As stated in the Department's letter of July 18, 1927, to you, the question of the fixation of per annum rates of pay for chemists was given serious consideration.

Sincerely yours,

CHARLES D. WILBUR,
Secretary of the Navy

The adjustments of salaries of chemists by the Welch Bill (as of July 1, 1928) did not correct salary conditions for chemists in the Naval Establishment and place them on a basis comparable with that of chemists in other branches of the governmental services.

The local Wage Board of the Philadelphia Navy Yard made certain recommendations for 1930 which included substantial increases for metallurgists and two other technical groups but none for chemists. The changes proposed are:

	Present Salary			Proposed Salary		
Metallurgists	$13.23			$16.24		
	12.81			15.68		
	12.04			15.26		
	11.62			14.98	$14.56	
	11.41			14.21		
	11.06			13.72	13.27	
	10.57			13.02		
	10.22			12.67	12.32	
Associate Metallurgists	$9.80	9.45	$9.17	$11.97	11.62	11.13
	8.82	8.68	8.33	10.78	10.57	10.22
				9.73		
Assistant Metallurgists	7.98	7.63	7.14	9.45	8.17	8.82
	6.79			8.33		
Junior Metallurgists	6.37	6.02	5.74	7.91	7.56	7.14
				7.00	6.44	
Assistant Superintendent, Inside	13.12	12.72	11.92	17.04	16.00	15.04
	11.60	11.12	11.04	14.00	13.04	12.00
	10.56	10.24	9.76	11.04	10.00	9.04
	9.44			8.00		
Chief Planner and Estimator	13.68	13.44		17.04	16.00	15.04
				14.00	13.04	12.00
				11.04	10.00	9.04
				8.00		

No increases were recommended for chemists by the local Wage Board.

Your Committee desires to point out that while salary increases for certain individuals are both highly desirable and necessary it has not

considered such salary increases as the essential element sought. What is essential and what all self-respecting chemists must unceasingly seek is proper classification of chemists and the cessation of unfair discrimination against a loyal, able, and worthy group, recognition of their status as professional men with consequent removal of the stigma and disability involved in the per diem system, and an increase in compensation to the same level as that prevailing in other branches of the governmental service. The chemists in the Navy Establishment entered the service under the regulations of the United States Civil Service Commission. The treatment of these chemists by the Naval Establishment under conditions altogether at variance with the Civil Service regulations is arbitrary and unjust and all lawful and honorable means should be used to correct this condition.

ALBERT P. SACHS

January 2, 1930

Concerning Our British Brethren

(*Continued from page 21*)

vitality to resist it. Still the idea works well in America, and there is certainly room for some of it here."

What, do you gather, is this which the editor thinks works so well in America? And who would like to make a few comments on these remarks?

PLEASE PASS ON THIS COPY OF THE CHEMIST TO SOME PROSPECTIVE MEMBER OF THE INSTITUTE. ADDITIONAL COPIES AND THE NEW APPLICATION BLANKS MAY BE OBTAINED FROM THE SECRETARY, HOWARD S. NEIMAN.

ALL ITEMS FOR THE NEXT ISSUE SHOULD BE SUBMITTED AS SOON AS POSSIBLE DIRECTLY TO THE EDITOR.

THE MEMBERS' FORUM

This department has been introduced as a meeting place for frank discussion of Institute activities, published articles, etc. Your co-operation in helping to make it a success will be some evidence that chemists are not quite so inarticulate as is commonly supposed.—EDITOR

TO THE EDITOR:

No attempt to discuss Mr. Barsky's *Facing Our Economic Problems* would be warranted without first thanking him for clearly setting forth:

First, the desirability, if not the necessity, for solidarity in the profession;

Second, the absurdity and impossibility of unionizing chemists;

Third, the economic and financial importance of the chemical profession;

Fourth, the vital interest of society at large in the growth and betterment of this profession, as a whole and individually; and

Fifth, certain directions in which we could very advantageously concentrate our efforts as opportunity arises.

Some comments, however, suggest themselves.

The economic importance of chemists is believed to be greatly underestimated. It may be asserted with reasonable assurance that the membership of the *American Chemical Society* comprises only about one-half of the chemists in the United States. Many, if not most of these men and women, would hardly be eligible for membership as Fellows of the Institute, but Associate membership should certainly be available to them, and the purposes of the Institute and advantages of membership should be made clear to them. The active co-operation of the *Chemical Foundation* in the necessary educational publicity would be one of its most fitting activities, and is most heartily welcomed. So far as the individual chemists are concerned, the financial burden of associate membership would in no case be felt, and Mr. Barsky's contribution makes it clear that the advantages to be gained are limited only by the support that the Institute and its officers receive from the chemists.

The change in employment to exclusive corporate employment also seems to me to be exaggerated. It must be judged by the proportion, not by the mere number of independent men. To my personal knowledge, the change in proportion is very great in the direction of independent consultants not exclusively employed by any one corporation or institution. This is a vast benefit to the profession as such, because it is primarily and chiefly to the independent men that the profession as a whole must look for fearless and independent leadership, unrepressed in one direction or another by the prejudices of mere corporate money, which, as such, has no morals, nor ethics, nor bowels of compassion—merely profit or loss, and more or less near-sighted business expediency.

Therefore, one of the serious questions for our profession is coming to be whether or not a corporation actually can practise professionally. The vast majority of opinion in other professions is against it for obvious reasons. When, for instance, physicians begin to be exclusively employed by the State, the remaining private practitioners and specialists will become enormously wealthy, because few intelligent and experienced persons will tolerate the bureaucratic stupidity and incompetence of a civil service clinic politically administered.

The Bar is fighting the same tendency for like reasons and, whichever way the pendulum may temporarily swing, it is safe to say that individual initiative and ambition will preserve the independence of the cream of the profession. The quality of patent work, for instance, done by the patent departments of large corporations is already leading to a larger field of usefulness for independent patent counsel, and I believe it will go much further, as more corporate-filed patents come to meet the practical test of litigation.

As to "looking to the other professions for guidance," it seems to me to be as absurd *not* to do it as it would be not to go to the library in laying out a research; but it would be equally absurd if we did not also face our own problems in a new and better way in the light, not only of their successes, but also of the failures of the older professions. We should examine their shortcomings as well as their perfections, seek their advice as to the causes of each, and ask their co-operation in our effort to profit by the teachings of both to the utmost degree.

The *Employment Service* can be—and is being—undertaken at once indirectly by the close co-operation of the Bureau of Employment of the Chemists' Club with the National Council of the Institute. That bureau does not pretend to be perfect, but neither will our own be perfect—if and when we establish one. Meanwhile, we can help to serve it and help to improve it. Without doubt the Chemists' Club will willingly transfer it to the Institute the moment we can prove that we are capable of carrying it, and can enable it to do better by the profession at large.

Statistical Surveys are valuable but are both misleading and vastly expensive when made "from the outside." The Department of Commerce could, and perhaps should, make such a survey; and it undoubtedly would do so if about twenty-thousand taxpayers and their wives would unite in demanding from Congress that such action be taken. Such information would be valuable to us in seeking further expansion when our market for the Institute approaches saturation; but it will never be of any use in determining what we should receive for our services, or in controlling the output of endowed educational institutions, any more than public demand controls the output of technical work from Government Bureaus.

Banking and its *Investment Trust* or *Securities Corporation*, as also the *Credit Union* and *General Insurance Coverage*, are all good and are legitimate objects of the Institute. However, they all go hand in hand and, as indicated by my own preliminary investigations of two of these possibilities (insurance and banking), they are absolutely dependent for their feasibility on the number of members—including particularly the most highly selected members of the profession. Equally, they are dependent for their success upon co-operation and supervision by those who are skilled and experienced in banking, investment, and insurance. Chemists are not.

Nothing could cast more discredit on the Institute or the profession than failure in an undertaking so widely advertised from the "news" point of view as that would have to be to attain the magnitude necessary to make it really successful *and safe*. Probably the worst mistake we could make would be to try to do it ourselves, or to undertake it with the co-operation of any bank or insurance company that might make an attractive offer for the business today. When we have a few thousand members who are willing to set aside from ten to twenty percent of their incomes, I am assured that one of the most reliable banks and one of the most reliable insurance companies will co-operate in directing the service.

Meanwhile, the young men of the profession sadly need to be educated in the value of co-operation, and the advantages which it will gain for themselves and for the profession in general.

New York, Jan. 2, 1930 WILLIAM M. GROSVENOR

TO THE EDITOR OF *The* CHEMIST:

Several times hints have appeared in *The* CHEMIST that the Washington Chapter should give more attention to State licensing and such subjects as have been engrossing the attention of the New York Chapter. I think so, too; however, I think it only fair to mention that it is very difficult to get U. S. Government chemists interested in State

licensing. This is because the Civil Service examinations are so severe that every man who has taken one has no fear of incompetents or those not fully trained getting by one of them. The difficulty really lies in finding enough capable people to take them and pass. We have worked hard to get members but we find very little interest. The feeling seems to be that the Institute has done nothing and is not likely to be able to do anything that will help the chemist in the Federal Government. The recent achievement of obtaining increases for the New York City chemists ought to help to dissipate this error. I think the whole attitude is wrong because anything that helps any chemist helps all. If the general level is raised we will all float higher, sooner or later.

Washington, D. C., Dec. 15, 1929 A. L. MEHRING, *Secretary*

TO THE EDITOR OF *The* CHEMIST:

Your request for discussion of Mr. Barsky's paper prompts the following:

When Gulliver was traveling about in Laputa, he visited the Grand Academy of Lagoda. Here the learned men of the land spent their time pursuing knowledge. One of the crack-brained schemes of the scientists was a project to abolish all words because words were only names for *things*, and it would be more "convenient for all men to carry about them such *things* as were necessary to express the particular business they are to discourse on." Gulliver points out that as a result, he had "often beheld two of those sages almost sinking under the weight of their packs, like pedlers among us, who when they meet in the streets would lay down their loads, open their saddles and hold conversation for an hour together, then put up their implements, help each other to resume their burdens, and take their leave."

We are not much better off. Chemists in this country are burdened with a load which is a more serious menace to their self-expression and their economic happiness than the bags of "things" carried around with them by the Laputan scientists. The modern sack contains the dead weight of medieval-mindedness and a fantastic superiority complex.

The man who stands all day long at a burette and titrates free alkali in soap; the man who runs endless Kjeldahl determinations; the man who makes innumerable steel combustions—all have a mystical aura about them of monks puttering around in a Gothic monastery. They think in terms of "Research," "Humanity," Pure Science," "The Glory of Mankind," and other pretty catch-phrases, and they ardently shun any plan of organization which would enable them to meet on a footing of equality men in other professions with a corresponding amount of education.

The highly trained men who have devoted large sums of money for their education, and who sport advanced degrees and honorary keys are victims of the same sort of misplaced illusions. They cling tenaciously to the antiquated notions of *Science for Science's Sake*, and as a result of their delusions of grandeur they consider it unthinkable to join a professional organization which is frankly in the field to raise not only the standards of the practising chemist but his remuneration as well. And so, while he is nibbling his carrots and peas, and he and his family are wearing shabby clothes and are living on a fancy scale of highfalutin' poverty, he reads the learned journals and schemes how to save a few dollars so that he can attend a convention or buy a necessary scientific book.

Modern industry owes much to every type of chemical worker, from the laboratory boy up to the research director, and it is to its discredit if it permits its devoted workers to sink to the level of cheap hired help. The problem is not easy because it would be a miracle if industrialists were to raise salaries on their own account to a point where an equitable adjustment had been made and a proper professional relationship had been established. Then again, in an age in which every person is supposed to be sharply on

the look-out for his own welfare, the chemist is apparently satisfied to be a comic martyr, an "absent-minded professor type," a sort of shoe clerk who is beside himself with joy when Texas Guinan Big Business says "Hello sucker!" to him. He is thankful because he gets praise instead of pudding and an occasional pat on the shoulder from the press in place of clothes and shelter. He receives a tolerant "there, there, my man" from his colleagues if he feebly voices his desire for a professional self-respect equal at least to one-half that of a graduate of a correspondence law school or a tenth that of a small time tap dancer.

Recently Dr. Barsky presented an idea which merits some extra notice. He called attention to the Actor's Equity Association which has helped to eliminate many of the ills in the theatrical profession. The American Institute of Chemists has had the benefit of the experience of the methods of organization of physicians and lawyers, but in the writer's opinion, the problem of the actor is very much the same as that of the chemist. Why not ask some one in the Equity Association to tell us how they managed to organize their heterogeneous group?

In the meantime, the American Institute of Chemists should be given every possible support, and we can do that best by bringing in new members who are willing and anxious to spread the aims and ideals of the only organization of chemists which is interested in the profession of chemistry from the standpoint of the chemist.

College of the City of New York,
80 Willoughby Street,
Brooklyn, N. Y.

LOUIS SATTLER

EDITOR, *The* CHEMIST:

Would it be possible to have explained in the columns of our magazine the magic contained in the number 1926? It seems that that group of numbers, so arranged, has a marvelously mystical significance.

As an example may I present the point brought forth by the A. I. C. in determining whether a person shall ever be a chemist or no. This organization claims that the astrological arrangement of the stellar universe previous to that year was so favorable that merely a baccalaureate degree with some subsequent practical experience was sufficient to place before the world a fully bloomed chemist. If, on the other hand, some poor unfortunate completed the same course as much as a whole year later, the complexion of things was so changed that should experience accumulate from now till the denouement, nothing more than *Junior* is to be the designation of my aforementioned unfortunate.

There are many of us—I am one—to whom those symbols 1926 have meant that we can never be legitimate chemists as defined by the A. I. C. Furthermore, we are in an ever-increasing number. Surely, there will come a time when we must resent this treatment. Unless this discrimination is lifted, I can see only disaster for the principles of the Institute.

Yours very truly,

WALTER R. CLARK

P. S. Incidentally, it may be that in the course of time we may even be able financially to afford the grand designation of Associate or Fellow, were it not for our nemesis 1926.

839 West End Avenue,
New York, N. Y.,
January 4, 1930.

THE NEW MEMBERS

Fellows

LUDWIG J. CHRISTMANN, Research Chemist, American Cyanamid Company, Warners, New Jersey.

CHARLES STEPHEN DEWEY, Dir. Chemical Research, Cabot Carbon Company, Brown Street, Pampa, Texas.

FRANK GOTTSCH, Fuel Engineering Chemist, Department of Purchase, City of New York, 480 Canal Street, 12th Floor, New York, N. Y.

MISS MARGARET HAIGHT, Teaching Fellow, Washington Square College, New York University, New York, N. Y.

WILLIAM ALDEN KINGMAN, Chemist, Lowe Paper Co., Ridgefield, New Jersey.

ISADORE SIDNEY MELLANOFF, Research Chemist, Kemikal, Inc., 822 N. Broad Street, Philadelphia, Pa.

WILLIAM RICHARD MINRATH, Tech. Adv. Mgr., D. Van Nostrand Company, Inc., 250 Fourth Avenue, New York, N. Y.

LEWIS D. NEWITT, Research Chemist, Calco Chemical Company, Inc., Bound Brook, New Jersey.

NOAH I. SILVERMAN, Chemist, Calco Chemical Company, Inc., Bound Brook, New Jersey.

EDWARD GATCHELL STICKNEY, Chemist, Wailes Dove-Hermiston Corporation, Westfield, New Jersey.

RALPH WECHSLER, Technical Director, National Oil Products Co., Harrison, New Jersey.

Associates

LOUIS LANG, Chief Chemist, Edgewater Refinery, National Sugar Refining Company, Edgewater, New Jersey.

MARTIN LEATHERMAN, Assistant Chemist, Bureau of Chemistry and Soils, U. S. Department of Agriculture, Washington, D. C.

NICHOLAS OPOLONICK, 521 W. 159th Street, New York, N. Y.

Note: Since the new year-book has just been issued, we suggest that you keep yours up to date by snipping out these new names and pasting them in your book each month.

NOTES FOR YOUR NEW YEAR-BOOK

Keep your year-book at hand and up to date by marking changes in it as soon as they are announced. Here are the first two:

MARY A. ROLLAND (*Associate*, page 42), 634 West 112th St., New York, N. Y.

FLORENCE E. WALL* (page 39), left Inecto, Inc., in December, 1928; only address, 345 East 68th Street.

* The Editor—the very same! Please send all contributions for *The* CHEMIST to this address. After all, a straight line *is* the shortest distance between two points.

PITY THE POOR SECRETARY

If the secretary writes a letter, it is too long.

If he sends a postal, it is too short.

If he sends out a notice, he is a spendthrift.

If he doesn't send a notice, he is lazy.

If he attends a committee meeting, he is butting in.

If he stays away, he is a shirker.

If the attendance of Councilors is slim, he should have called them up.

If he does call them up, he is a pest.

If he duns the members for dues, he is insulting.

If he fails to collect the dues, he is slipping.

If the meeting is a big success, the officers are praised.

If it is not a success, the secretary is blamed.

If he asks for advice, he is incompetent and if he does not he is bullheaded.

If he writes the minutes complete, they are too long, and if he condenses them, they are incomplete.

If he talks on the subject, he is trying to run things, and if he remains quiet, he has lost interest in the organization.

Ashes to Ashes,
Dust to dust.
If the others won't do it,
The secretary must.—*Exchange*

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